Prevention parallel session: Background on HBV vaccination

Presenter:
Stefan Wiktor
Team Lead, Global Hepatitis Programme
World Health Organization
<table>
<thead>
<tr>
<th>Region</th>
<th>Perinatal (%)</th>
<th>Early childhood (%)</th>
<th>Late (%)</th>
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<tbody>
<tr>
<td>Africa</td>
<td>18</td>
<td>52</td>
<td>30</td>
</tr>
<tr>
<td>Americans</td>
<td>23</td>
<td>37</td>
<td>40</td>
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<tr>
<td>Eastern Mediterranean</td>
<td>13</td>
<td>47</td>
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</tr>
<tr>
<td>Europe</td>
<td>16</td>
<td>40</td>
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<tr>
<td>Southeast Asia</td>
<td>17</td>
<td>48</td>
<td>35</td>
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<tr>
<td>Western Pacific</td>
<td>26</td>
<td>47</td>
<td>26</td>
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<tr>
<td>Global</td>
<td>21</td>
<td>48</td>
<td>31</td>
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</table>
Modes of HBV Transmission in Neonates and Early Childhood

1) Transmission from infected mother to infant during delivery or before

2) Transmission from infected household contacts to infant or child

- The hepatitis B vaccine administered shortly after birth serves 2 functions: as post-exposure prophylaxis following exposure and as protection for future exposures
Perinatal transmission: most efficient!

- **HBsAg positive Mother**
  - **HBsAg positive**
    - Transmission Rate: 70-90%
  - **HBsAg negative**
    - Transmission Rate: 10%

- Neonate Evolution to Carrier: 90%
- Neonate Evolution to Carrier: 10-15%
Outcome of HBV Infection According to Age at Time of Infection

% of infections with outcome

Birth | 1–6 months | 7–12 months | 1–4 years | Older children and adults

Chronic infection
Symptomatic acute infection

WHO 2001
Prevalence of Chronic Hepatitis B Virus Infection Among Children Before and After HepB Vaccine Introduction

- Taiwan: Children born before hepB introduction (10), Children born after hepB introduction (1)
- Shanghai: Children born before hepB introduction (8), Children born after hepB introduction (1)
- Rural China: Children born before hepB introduction (15), Children born after hepB introduction (3)
- Gambia: Children born before hepB introduction (12), Children born after hepB introduction (2)
- Alaska: Children born before hepB introduction (5), Children born after hepB introduction (1)
- Thailand: Children born before hepB introduction (7), Children born after hepB introduction (1)

HBsAg prevalence in the different regions.
China, Qidong, cross sectional surveys in 1996-2000 and 2008-2012:
Incidence of PLC and mortality of end stage liver disease significantly lower in vaccinees versus controls

Chunfeng Qu, PLOS Medicine, 2014
WHO recommendations

Hepatitis B vaccines
WHO recommendations October 2009

- All infants should receive their first dose of hepatitis B vaccine as soon as possible after birth, preferably within 24 hours.

- The birth dose is crucial in areas of high hepatitis B endemicity, but important even in intermediate and low endemicity areas.

- To complete the primary series the birth dose should be followed by 2 doses, spaced by ≥ 4 weeks, e.g. at the time of the first and third doses of DTP vaccine, or, if programmatic more convenient, by 3 doses coinciding with DTP or other routine infant vaccines.

- There is no evidence to support the need for a booster dose following 3 (or 4) doses of hepatitis B vaccine in routine immunization programmes.
Continued success in HBV immunization: Global HepB3 & BD coverage, 2000-2013

Immunization Vaccines and Biologicals, (IVB), World Health Organization.
Global Immunization 1989-2013, 3rd dose of Hepatitis B coverage in infants

Immunization Vaccines and Biologicals, (IVB), World Health Organization.
194 WHO Member States. Date of slide: 29 July 2014.
Immunization coverage with birth dose of HBV vaccine, 2013

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Date of slide: 30 July 2014
Status quo

HBV infant vaccination coverage >90%

+ Birth-dose coverage >80%

+ Full PMCT 80%

Incidence of chronic HBV infections under different scenarios (2015-2080)

Number of new infections x10^6

Adapted from Nayagam S, EASL 2015
Prevention parallel session: Target setting and HBV vaccination
Example from the Western Pacific Region
Presenter: Nick Walsh
Focal point for viral hepatitis
WHO Regional Office for the Western Pacific
HBV control through vaccination in the Western Pacific

Goal
HBsAg <1%

Milestone
HBsAg < 2%
by 2012

Goal
by 2017

RM 2003
2003
8%
Verification
process
established
2005

Regional
HBsAg < 2%
verified

RCM 2005
2005

RCM 2013
2013
<1%
HBV vaccination status in the Western Pacific in 2002

Some progress, inconsistent coverage

- HBV vaccination recommended by WHO in 1992
- In 2002 some countries had already shown success
- Incorporation of HBV vaccine into National Immunisation Programmes but:
  - Initial affordability and capacity constraints affecting coverage in a number of large countries
  - Gaps in GAVI funding - *If vaccine not free, income determines coverage*
  - Specific supply issues for birth dose (cold chain, single vial)
- 2 main barriers to HBV vaccine coverage
  - Lack of appreciation of the HBV disease burden
  - Price of vaccine
Advice to WHO WPRO in 2002

• Expert group recommended WHO to act to support Member States to improve birth dose implementation as:
  – Birth dose results in fewer infections
  – Birth dose reduces infectious pool which mitigates population transmission
  – Need a clear objective
  – No out-of-pocket expenses
  …given ample evidence…

“Do not leave this to your successors”
Challenges in setting the goal – 2002

• “An objective must be scientific, enable monitoring and evaluation, and be a tool for advocacy and resource mobilization. Setting a disease control objective for hepatitis B is not straightforward because of the nature of the disease, and the need to have objectives that can be met in a five to 10 year timeframe and require baseline data that do not exist for most countries. The full impact of hepatitis B immunization programmes of today will not be seen for 30 to 40 years.”
How to verify a vaccination goal?

• Time-lag for HBV complications
  – Verifying coverage is better than outcome

• Timing of vaccine dosing is crucial for BD
  – Measure timing

• Regional & national measures:
  – Each country should have a National Plan of Action for achieving and measuring coverage

• Programme efficiency
  – HBV vaccination should be integrated into existing immunisation programmes
How did a Regional time-bound target contribute to HBV control in the Western Pacific?

• Created a sense of political urgency
• Accelerated HBV vaccine introduction and integration
• Highlighted the fundamental importance of routine immunisation (vs campaign based delivery)
• Brought visibility to:
  – Hepatitis infections and liver-related disease in general
  – Needs for adults living with viral hepatitis
• Raised the need of hepatitis treatment of adults
Acknowledgements

- Eric Wiesen – HBV immunisation technical officer WPRO
- Manju Rani – former HBV immunisation technical officer WPRO

Hepatitis B Prevention in China
Strategies, Achievement and Challenges

Dr. LU Ming
National Health and Family Plan Commission
P. R. China
2 September, 2015
Outline

• Epidemiology and disease Burden of Hepatitis B in China
• Strategies and Measures for Control of Hepatitis B in China
• Achievement of Hepatitis B Prevention and Control in China
• Remaining challenges and Future Considerations
Disease Burden of Hepatitis B, China

• In 1992
  – 60% of the population had a history of hepatitis B virus (HBV) infection and 9.8% were chronically infected with HBV.
  – Each year, an estimated 263,000 persons died from HBV-related hepatocellular carcinomas (HCC) or cirrhosis, accounting for 37%-50% of HBV-related deaths worldwide.
  – Perinatal transmission accounted for 40% of chronic infection.
## Progress in Hepatitis B Vaccine Policy in China

<table>
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<tr>
<th>Year</th>
<th>Key decisions</th>
<th>Subsequent situation</th>
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<tbody>
<tr>
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<td><strong>Progress</strong></td>
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<tr>
<td>1992</td>
<td>Hepatitis B vaccine included in EPI management</td>
<td>Government takes responsibility for vaccination and monitors coverage</td>
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<tr>
<td>2002</td>
<td>Hepatitis B vaccine fully integrated into EPI, with vaccine and syringes free of charge</td>
<td>Vaccine and syringes provided for free</td>
</tr>
<tr>
<td>2005</td>
<td>Users fee abolished through provision of by the central government</td>
<td>All vaccinations provided for free</td>
</tr>
<tr>
<td>2008-</td>
<td>Central government took over the cost of vaccine and AD syringes in the whole country, provided operational funding and subsidies</td>
<td>Sustainability ensured</td>
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<td>2009-2011</td>
<td>Nationwide hepatitis B catch-up vaccination among children and adolescents in China</td>
<td>68 million children under 15 years were vaccinated</td>
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Strategies to improve timely birth dose

- General approach: Build bridges between delivery service (MCH) and vaccination service (EPI)
  - Initial assessment, with surveys
  - Implementation
  - Final evaluation

- Intervention strategies:
  1. Improve hospital delivery rate
  2. Training for health care workers
  3. Increase awareness on importance of timely birth dose among parents
  4. Micro-plans to increase coverage among home births, including a subsidy to providers
Coverage of HepB increased over the years, China 1992-2014

Vaccination Coverage (%)
The prevalence of HBsAg in China

Sources: National Serosurveys in 1979, 1992, 2006 and 2014
Other Strategies for Hepatitis B Prevention and Control in China

• **Blood donors screening**
  – 1980s, Blood donors were screened for HBsAg status
  – 1998, Blood Donation Law was implemented
  – 2013, Nucleic acid technology was used in blood donor screening

• **Surveillance**
  – National Notifiable Disease Reporting System
  – Pilot study to improve the quality of surveillance

• **Hospital infection control**
  – Safe injection practices
  – Disinfection management
  – Medical waste treatment

• **Treatment and management of chronic infection and patients**

• **Strengthen the comprehensive prevention and control of sexually transmitted diseases**

• **Public propaganda and health education**
China achieved the WPRO regional goal, 2012

- China achieved the WPRO regional goal
  - HBsAg Prevalence is 0.96% among <5
Remaining Challenges-Prevention

- **Vaccination**, Sustain high levels of vaccination coverage
  - Low birth dose coverage in certain areas
  - Low screening rate at grass root level
  - Adult HepB vaccination guideline
  - Fragile public confidence

- **Hepatitis B surveillance and evaluation**, improve surveillance of acute hepatitis
  - Diagnostic criteria and case reporting standard is not unified
  - Lack of grass-roots medical personnel training
  - Low accuracy of hepatitis B diagnosis and classification
  - Low level of hospital laboratory detection ability

- **HBsAg Screening**, monitor HBsAg (and HBeAg if feasible) positivity amongst pregnant women
  - Difficult to achieve universal HBV screening in the general population
  - Domestic reagent quality is not satisfactory and HBV screening results are not stable
  - Laboratory personnel need more training
Future Considerations

• **Prevention: comprehensive measures**
  – Hep B infant immunization: maintain high coverage
  – High-risk groups vaccination
  – Antenatal screening and PMTCT
  – Blood safety management
  – Hospital infection control
  – Comprehensive prevention and control of sexually transmitted diseases

• **Management**
  – Top level design and strategic plan
  – Policy study, formulation and implementation

• **Surveillance and evaluation**
  – Improve sensitivity and accuracy of diagnosis
  – Epidemiological investigation of acute hepatitis B

• **Screening and treatment**
  – Reduce the price of drugs
  – Standardize treatment management
  – Medical staff training

• **Health education**
  – Public health education
  – Social mobilization
Thanks